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EXAMINER	
MURPHY, DILLON J	

ART UNIT	PAPER NUMBER
2624	

DATE MAILED: 03/16/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/988,905	REGIMBAL, LAURENT A.	
	Examiner	Art Unit	
	Dillon J. Murphy	2624	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *27 December 2005*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-18* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-18* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *19 November 2001* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

- This action is responsive to the amendment filed on December 27, 2005.
- Claims 1-18 are pending. Claims 1, 5, 7, 10, 11, 16, and 17 are amended. Claim 18 is new.

Claim Objections

Claim 5 is objected to under 37 CFR 1.75(d) because of the following informalities:

Claim 5 recites the limitation "the print information" in line 2. There is insufficient antecedent basis for this limitation in the claim.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

Claims 1, 4, 7, 9, 11, 12, and 17 are rejected under 35 U.S.C. 103(a) as being unpatentable over Stephenson (US 5140340) in view of Karidi (US 20030193680).

Regarding claim 1, Stephenson teaches a method comprising measuring a print media skew of print media (Stephenson, col 2, ln 18-20, media skew is measured);

Mapping unskewed print information to compensate for the print media skew, thereby creating skew-corrected print information, and using the skew-corrected print

information to apply a print image to the print media (Stephenson, col 2, ln 20-26, correction signals are combined with image data such that a printed image is aligned properly with the skewed print media).

Stephenson does not disclose expressly a method wherein the mapping comprises turning off half-toning to simplify the mapping. Karidi, however, teaches a method wherein mapping comprises turning off half-toning (Karidi, paragraph 18, wherein image reconstruction pathway comprises rotation (paragraph 20), deskewing (paragraph 22), and half-toning (see fig 2b,halftone module #57). Each functional unit in the image reconstruction path may be turned off or on, i.e. half-toning may be turned off. Although Karidi does not disclose expressly turning off the half toning to simplify the mapping, the method of Karidi would accomplish the same result).

Stephenson and Karidi are combinable because they are from a similar field of endeavor of image processing for an imaging system. At the time of the invention, it would have been obvious to a person of ordinary skill in the art to combine the method of Karidi comprising turning off the half-toning to simplify mapping with the method of Stephenson comprising measuring a print media skew, mapping unskewed print information to compensate for print media skew, and using the skew-corrected print information to print the image. The motivation for doing so would have been to provide flexibility in an image-processing pathway by providing only those functional units of interest to the user (Karidi, paragraph 18). Therefore, it would have been obvious to combine Karidi with Stephenson to obtain the invention as specified in claim 1.

Regarding claim 4, which depends from claim 1, the combination Stephenson, Karidi, and Levin further teaches a method wherein mapping comprises mapping location information associated with each pixel contained within the unskewed print information by an amount required to compensate for the skew of the print media (Stephenson, col 8, ln 12-17, mapping measures column and line shift for each pixel of image data. See also col 7, ln 37-40).

Regarding claim 7, the combination Stephenson and Karidi teaches a method comprising:

Taking a measurement of print media skew (Stephenson, col 2, ln 18-20, media skew is measured);

Creating skew-corrected print information using the measurement of print media skew, wherein the skew-corrected print information is created with the half-toning turned off (Karidi, paragraph 18, wherein half-toning may be turned off while mapping) and applying a print image to print media using the skew-corrected print information (Stephenson, col 2, ln 20-26, correction signals are combined with image data such that a printed image is aligned properly with the skewed print media).

Regarding claim 9, which depends from claim 7, the combination Stephenson and Karidi further teaches a method wherein creating skew-corrected print information comprises mapping a location of a pixel of unskewed print data according to the print media skew (Stephenson, col 8, ln 12-17, mapping measures column and line shift for each pixel of image data. See also col 7, ln 37-40).

Regarding claim 11, the combination Stephenson and Karidi teaches a system comprising:

A sensor to sense skew of print media within a printer (Stephenson, figure 1, position sensor #16 measure skew of print media); and

A print output alignment module to map un-skewed print information to compensate for print media skew detected by the sensor, thereby creating skew-corrected print information (Stephenson, col 2, ln 18-26, wherein a data conditioner responds to the dislocation of the print media and generates correction signals to compensate for the print media skew, thereby creating skew corrected print information), wherein the mapping comprises turning off half-toning (Karidi, paragraph 18, wherein image reconstruction pathway comprises rotation (paragraph 20), deskewing (paragraph 22), and half-toning (see fig 2b,halftone module #57) to simplify the mapping (By turning off the half toning, Karidi accomplishes the same intended use), wherein the print output alignment module aligns print output according to the skew of the print media (Stephenson, figure 1, data conditioner #18 calculates image alignment according to skew of print media, col 8, ln 12-17).

Regarding claim 12, which depends from claim 11, the combination Stephenson and Karidi further teaches a system wherein the print output alignment module comprises:

A skew evaluation module to interpret measurements made by the sensor (Stephenson, col 4, ln 25-27, data conditioner receives data from sensor and accordingly interprets measurements); and

A print data mapping module to map unskewed print data to skew-corrected print data (Stephenson, col 6, ln 5-15, data conditioner receives measurements from sensor, generates correction signals, i.e. data mapping signals, to map unskewed print data to skew-corrected print data).

Regarding claim 17, the combination Stephenson and Karidi teaches a computer-readable medium having processor-executable instructions thereon (Stephenson, col 4, ln 28-38, operation of printer is controlled by software on a microprocessor) which, when executed by a processor, cause the processor to:

Measure skew of print media (Stephenson, col 2, ln 18-20, media skew is measured);

Turn off half-toning (Karidi, paragraph 18, wherein image reconstruction pathway comprises rotation (paragraph 20), deskewing (paragraph 22), and half-toning (see fig 2b,halftone module #57) to simplify skew-correction (Although Karidi does not disclose expressly turning off the half toning to simplify the mapping, the instruction of Karidi would accomplish the same result);

Create skew-corrected print information according to the skew, and apply a print image to the print media according to the skew-corrected print information (Stephenson, col 2, ln 20-26, correction signals are combined with image data such that a printed image is aligned properly with the skewed print media).

Claims 2, 3, 6, 8, 13, and 14 are rejected under 35 U.S.C. 103(a) as being unpatentable over Stephenson (US 5,140,340) in view of Karidi (US 20030193680), and

further in view of Ui et al. (US 6,340,984), hereafter referred to as Stephenson, Karidi, and Ui.

Regarding claim 2, which depends from claim 1, the combination of Stephenson and Karidi teaches a method of measuring skew of print media, mapping unskewed print information to compensate for the media skew, wherein the mapping comprises turning off half-toning to simplify the mapping, and using the skew-corrected print information to apply a print image to the print media, as explained above in the rejection of claim 1. The combination of Stephenson and Karidi does not disclose expressly the method of measuring a left and right translation and measuring an angular rotation of the print media. Ui, however, discloses a method for measuring the horizontal translation and angular rotation of print media skew (Ui, col 5, ln 40-50, sensor detects horizontal shift and skew angle).

Stephenson, Karidi, and Ui are combinable because they are from a similar field of endeavor of printing on skewed print media with skew-corrected print information. At the time of the invention, it would have been obvious to a person of ordinary skill in the art to combine the explicit method of measuring the horizontal translation and angle of print media skew of Ui with the method of measuring print media skew, mapping unskewed print information to skewed print information, wherein the mapping comprises turning off half-toning to simplify the mapping, and printing an image on print media as taught by the combination of Stephenson are Karidi. The motivation for doing so would have been to form on a recording sheet an image which is free from inclination, and there is lightened a load for maintaining the accuracy and strength imposed on design

and manufacture of an inclination prevention mechanism, thereby increasing the degree of freedom for design of an image forming apparatus, reducing cost and increasing speed of image forming (Ui, col 8, ln 16-25), as well as to provide a relatively simple printing system which provides accurate alignment of colors on a receiver at low cost and high speed (Stephenson, col 2, ln 8-11). Therefore, it would have been obvious to combine Ui with the aforementioned combination of Stephenson and Karidi to obtain the invention as specified in claim 2.

Regarding claim 3, which depends from claim 1, the combination of Stephenson, Karidi, and Ui further teaches a method wherein mapping comprises mapping location information associated with each pixel contained within the unskewed print information by an amount required to compensate for the left-right translation and the angular rotation of the print media (Ui, col 4, ln 50-56, each pixel is shifted according to a trigonometric function, and col 5, ln 40-50, wherein shifting is based upon the amount of horizontal and angular skew in print media).

Regarding claim 6, which depends from claim 1, the combination of Stephenson, Karidi, and Ui further teaches a method additionally comprising buffering unskewed print information to provide sufficient input for the mapping (Ui, col 4, ln 58-62, wherein the unskewed image data is read from an image memory to be processed).

Regarding claim 8, which depends from claim 7, the combination of Stephenson, Karidi, and Ui further teaches a method wherein taking a measurement comprises determining a left-right translation of the print media from a desired location, and

determining an angle of rotation of the print media from a desired orientation (Ui, col 5, ln 40-50, sensor detects horizontal shift and skew angle).

Regarding claim 13, which depends from claim 11, the combination of Stephenson, Karidi, and Ui further teaches a system additionally comprising a first print data buffer to store unskewed print data (Ui, col 4, ln 58-62, wherein the unskewed image data is read from an image memory to be processed).

Regarding claim 14, which depends from claim 11, the combination of Stephenson, Karidi, and Ui further teaches a system additionally comprising a second buffer to store skew-corrected print data (Ui, col 4, ln 58-62, wherein the system comprises a second buffer to store skew-corrected print data, from which the output of images is controlled based on that data).

Claims 5, 10, and 18 are rejected under 35 U.S.C. 103(a) as being unpatentable over Stephenson (US 5,140,340) in view of Karidi (US 20030193680) and further in view of Levien (US 6097855), hereafter referred to as Stephenson, Karidi, and Levien.

Regarding claim 5, which depends from claim 1, the combination of Stephenson and Karidi teaches a method of measuring skew of print media, mapping unskewed print information to compensate for the media skew, wherein the mapping comprises turning off half-toning to simplify the mapping, and using the skew-corrected print information to apply a print image to the print media, as explained above in the rejection of claim 1. The combination of Stephenson and Karidi does not disclose expressly a method additionally comprising, after mapping, half toning the print information. Levien,

however, teaches a method comprising, after mapping, half toning the print information (Levien, col 2, ln 26-30, wherein skewing is performed prior to screening (half-toning), therefore data is half-toned after mapping).

Stephenson, Karidi, and Levien are combinable because they are from a similar field of endeavor of image processing to compensate for skewed images and media. At the time of the invention, it would have been obvious to a person of ordinary skill in the art to combine the method of Levien comprising half toning the print information after mapping with the combination of Stephenson and Karidi teaching a method comprising measuring skew of print media, mapping unskewed print information to compensate for the media skew, wherein the mapping comprises turning off half-toning to simplify the mapping, and using the skew-corrected print information to apply a print image to the print media. The motivation for doing so would have been to reduce the number of pixels to skew while reducing the size of "jagged stair steps" to improve the quality of the mapped print information (Levien, col 3, ln 39-40). Therefore, it would have been obvious to combine Levien with the combination of Stephenson and Karidi to obtain the invention as specified in claim 5.

Regarding claim 10, which depends from claim 7, the combination Stephenson, Karidi, and Levin further teaches a method additionally comprising, after mapping, half-toning the skew-corrected print information (Levien, col 2, ln 26-30, wherein deskewing is performed prior to screening (half-toning), therefore data is half-toned after mapping).

Regarding claim 18, which depends from claim 17, the combination of Stephenson, Karidi, and Levien teaches a computer-readable having processor-

executable instructions additionally comprising instructions which half-tone the skew-corrected print image after it is created (Levien, col 2, ln 26-30, wherein skewing is performed prior to screening (half-toning), therefore data is half-toned after mapping).

Claim 15 is rejected under 35 U.S.C. 103(a) as being unpatentable over Stephenson (US 5,140,340) in view of Karidi (US 20030193680) and further in view of Ishihara et al. (US 4,941,377), hereafter referred to as Stephenson, Karidi, and Ishihara.

Regarding claim 15, which depends from claim 11, the combination of Stephenson and Karidi teaches a system comprising a sensor to sense skew of print media in a printer, and a print output alignment module map un-skewed print information to compensate for print media skew detected by the sensor, therby creating skew-corrected print information, wherein the mapping comprises turning off half-toning to simplify the mapping, wherein the print output alignment module aligns print output according to the skew of the print media, as explained above in the rejection of claim 11. The combination of Stephenson and Karidi does not disclose expressly a system additionally comprising a media rejection module to reject the print media if the skew exceeds a threshold value. Ishihara, however, discloses a system comprising a media rejection module to reject the print media if the skew exceeds a threshold value (Ishihara, col 4, ln 14-27, printing system comprises skew sensor which senses the skew of the print media and halts the printer if the skew is too large to allow for servicing, thereby rejecting the print media).

Stephenson, Karidi and Ishihara are combinable because they are from a similar field of endeavor of printing systems with skew detection and control. At the time of the invention, it would have been obvious to a person of ordinary skill in the art to combine the media rejection module as taught by Ishihara with the skew sensor and print output alignment module as taught by the combination of Stephenson and Karidi. The motivation for doing so would have been to provide a printer that makes maintenance and replacement easier, and also safer and easier to recover from paper jamming (Ishihara, col 7, ln 53-56). Therefore, it would have been obvious to combine Ishihara with the combination of Stephenson and Karidi to obtain the invention as specified in claim 15.

Claim 16 is rejected under 35 U.S.C. 103(a) as being unpatentable over Ui et al. (US 6,340,984) in view of Ishihara et al. (US 4,941,377) and further in view of Karidi (US 20030193680), hereafter referred to as Ui, Ishihara, Karidi.

Regarding claim 16, Ui teaches a system to detect and compensate for print media skew within a printer (Ui, col 1, ln 47-54, imaging forming apparatus detects media skew and maps image data to form an unskewed image relative to a skewed print media), comprising:

A skew evaluation module to interpret measurements made by a sensor and determine print media skew (Ui, figure 2, Line Sensor LS transmits horizontal and angular skew measurements of print media to Inclination/Shift Calculation Section SO, where SO interprets measurements and determines print media skew, col 4, ln 28-35);

A first print data buffer to store unskewed print data (Ui, col 4, ln 58-62, wherein the unskewed image data is read from an image memory to be processed);

A print data mapping module to map the unskewed print data to skew-corrected print data (Ui, figure 2, Control Section CR (not shown) controls Reading Section RD, and the CR and the RD constitute the image angle correction means. See col 4, ln 37-41); and

A second buffer to store the skew-corrected print data (Ui, col 4, ln 58-62, wherein the system comprises a second buffer to store skew-corrected print data, from which the output of images is controlled based on that data).

Ui does not teach a media rejection module to reject print media if the print media skew exceeds a threshold value, nor does Ui teach the print data mapping module turning off the half-toning to simplify the mapping. Ishihara, however, teaches a system comprising a media rejection module to reject print media if the print media skew exceeds a threshold value (Ishihara, col 4, ln 14-27, printing system comprises skew sensor which senses the skew of the print media and halts the printer if the skew is too large to allow for servicing, thereby rejecting the print media).

Ui and Ishihara are combinable because they are from a similar field of endeavor of printing systems dealing with skew correction and control. At the time of the invention, it would have been obvious to a person of ordinary skill in the art to combine the media rejection module as taught by Ishihara with the system as taught by Ui comprising a skew evaluation module, a print data mapping module, and a first and second data buffers to store unskewed and skewed data, respectively. The motivation

for doing so would have been to provide a printer that makes maintenance and replacement easier, and also safer and easier to recover from paper jamming (Ishihara, col 7, ln 53-56), as well as to form on a recording sheet an image which is free from inclination, and there is lightened a load for maintaining the accuracy and strength imposed on design and manufacture of an inclination prevention mechanism, thereby increasing the degree of freedom for design of an image forming apparatus, reducing cost and increasing speed of image forming (Ui, col 8, ln 16-25).

The combination of Ui and Ishihara teaches a system to detect and compensate for print media skew within a printer comprising a skew evaluation module, a media rejection module, a first print data buffer, a print data mapping module, and a second print data buffer. The combination of Ui and Ishihara does not disclose expressly a system wherein the print data mapping module turns off half-toning to simplify the mapping. Karidi, however, teaches a system for compensating for print media skew within a printer (Karidi, paragraph 22, wherein deskewing is performed to compensate for skew in media), wherein the print data mapping module (Karidi, fig 1, image reconstruction path #10) turns off half-toning in order to simplify the mapping (Karidi, paragraph 18, wherein image reconstruction pathway comprises rotation (paragraph 20), deskewing (paragraph 22), and half-toning (see fig 2b,halftone module #57). Each functional unit in the image reconstruction path may be turned off or on, i.e. half-toning may be turned off. Although Karidi does not disclose expressly turning off the half toning to simplify the mapping, the method of Karidi would accomplish the same result).

Ui, Ishihara, and Karidi are combinable because they are from a similar field of endeavor of image processing to correct media skew. At the time of the invention, it would have been obvious to a person of ordinary skill in the art to combine the system of Karidi comprising a print data mapping module wherein half-toning is turned off with the system of Ui and Ishihara comprising a skew evaluation module, a media rejection module, a first print data buffer, a print data mapping module, and a second print data buffer. The motivation for doing so would have been to provide flexibility in an image-processing pathway by providing only those functional units of interest to the user (Karidi, paragraph 18). Therefore, it would have been obvious to combine Karidi with the combination of Ui and Ishihara to obtain the invention as specified in claim 16.

Response to Arguments

Applicant's arguments, see "Traversal of the 103 Rejection", pages 9-16, filed December 27, 2005, with respect to the rejection(s) of claim(s) 1-18 under 35 U.S.C 103a have been fully considered and are persuasive. Therefore, the rejection has been withdrawn. However, upon further consideration, a new ground(s) of rejection is made in view of Karidi (US 20030193680) and Levien (US 6097855).

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Dillon J. Murphy whose telephone number is (571) 272-5945. The examiner can normally be reached on M-F, 8-5.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Kimberly Williams can be reached on (571) 272-7471. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

DJM

KIMBERLY WILLIAMS
SUPERVISORY PATENT EXAMINER